

5. CUMULATIVE IMPACTS

Cumulative impacts are those that may result from the incremental impacts of an action considered additively with the impacts of other past, present, and reasonably foreseeable future actions. Cumulative impacts are considered, regardless of the agency or person undertaking the other actions (40 *CFR* 1508.7), and can result from the combined or synergistic effects of individual minor actions over a period of time.

5.1 POTENTIALLY CUMULATIVE ACTIONS

This section describes present actions, as well as reasonably foreseeable future actions, that are considered pertinent to the analysis of cumulative impacts for the proposed action. The information presented includes new actions that were not considered in 1997 EA, or it updates information included in the 1997 EA. The locations of these actions and their relationship to ETPP are shown on [Fig. 5.1](#). The actions are as follows.

Horizon Center. On April 29, 2003, DOE transferred title to the developable portions (approximately 489 acres) of Parcel ED-1 (also known as the Horizon Center) to Horizon Center LLC, a subsidiary of CROET. Horizon Center LLC plans to continue the development of the Horizon Center as an industrial/business park for R&D, medical technology, manufacturing, distribution, and corporate headquarters office facilities. DOE will maintain ownership of the remainder of the parcel, which includes the Natural Area (approximately 468 acres). Horizon Center LLC, under a lease agreement with DOE, will lease the Natural Area, and continue to be responsible for meeting the requirements of the Mitigation Action Plan. The environmental consequences of the title transfer were reviewed in an EA Addendum and a FONSI was signed on April 2, 2003 (DOE 2003).

Oak Ridge Industrial Center. The Oak Ridge Industrial Center is located at the site partially developed by the Tennessee Valley Authority (TVA) for the Clinch River Breeder Reactor prior to 1983. The 1245-acre property is for sale by TVA and has been considered for development by several manufacturing industries. TVA has graded a 150-acre tract on the property to < 2% slope. The remaining land is rolling to rough terrain, having an 8 to 20% slope (ORCC 1999). The developable land contains tracts with hardwood forests and pine plantations impacted by the Southern pine beetle. The site also contains cultural resources. TVA has also designated a 103-acre tract bordering Grassy Creek as the Grassy Creek Habitat Protection Area to be reserved for protection of bugbane (*Cimicifuga rubifolia*) habitat (TVA 1988). A feeder road may be constructed by the Tennessee Department of Transportation (TDOT) to improve access from State Route 58, pending the sale and further industrial development of the property (ORCC 1999).

Oak Ridge National Laboratory Revitalization Project. DOE is implementing a Facilities Revitalization Project (FRP) at ORNL in order to modernize some ORNL facilities, maintain ORNL's competitive R&D capabilities, enhance worker health and safety, and reduce operating costs. The FRP includes constructing new facilities on brownfield land and remodeling numerous existing facilities. Up to six buildings will potentially be demolished. Approximately 1.8-million ft² of space in aging buildings, mostly at Y-12, is being vacated.

Conceptual plans for the FRP include construction of up to 24 new facilities totaling approximately 1.2-million ft² in Bethel Valley near the main ORNL entrance, near the West Portal in Melton Valley, and within the footprint for the SNS. Some of the new construction is being funded by the state of Tennessee and the private sector. About 50 acres of brownfield property in Melton Valley have been transferred from DOE to the private sector in support of this proposed action. The environmental consequences of this

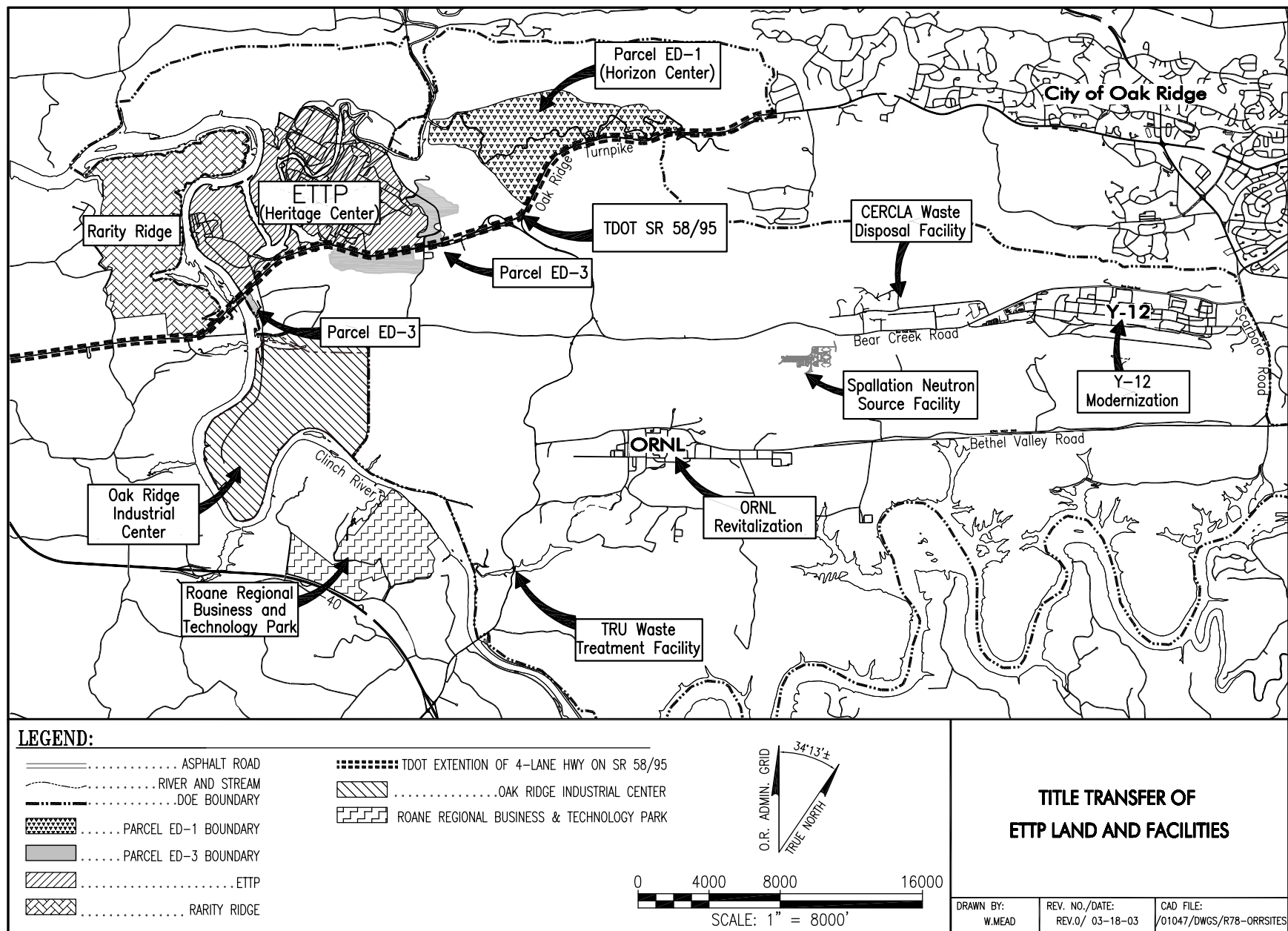


Fig. 5.1. Present and potential future actions contributing to cumulative impacts.

project were reviewed in an EA, and a FONSI was signed on June 1, 2001 (DOE 2001b). Construction began in August 2002 on the Joint Institute for Computational Sciences, Research Office Complex, Engineering Technology Facility, and the new facility for the Mouse Genetics and Genomics Program. These facilities should be completed by September 2003.

ORR Conservation Easement. DOE and the state of Tennessee have signed an “agreement in principle” that would create a conservation easement for approximately 3000 acres of ORR land located west of Wisconsin Avenue along Blackoak Ridge. The designation is intended to be a partial settlement by DOE for natural resource damages at the Lower Watts Bar reservoir. Once finalized, the easement will allow DOE to retain ownership of the land but DOE will provide funding to the state for the management of the property.

Parcel ED-3. DOE is also considering the transfer of a parcel of land designated as Parcel ED-3 for economic development purposes. Consistent with the PMP and E.O. 12512, DOE may consider disposal (i.e., title transfer) of this parcel. Parcel ED-3 is located along portions of State Route 327 (Blair Road) and State Route 58 (Oak Ridge Turnpike). If transferred, the property would be marketed for commercial and light industrial uses. The environmental consequences of the proposed transfer of this property were reviewed in a Draft EA (DOE 2000) issued to the public on September 27, 2000. DOE is evaluating a revised footprint that is consistent with one of the alternatives evaluated as a part of the ORR Land Use Planning Process (ORNL 2002) and the recently completed Draft E.O. 12512 Utilization Survey for the ETTP Area of Responsibility.

Pine Ridge Development. In 1969 the City of Oak Ridge acquired 230 acres of property, identified as Site X, from the then Atomic Energy Commission. The property included the current Valley Industrial Park and a portion of Pine Ridge. In 1999 the City transferred approximately 71 acres of Pine Ridge between South Illinois Avenue, Union Valley Road, and Scarboro Road to the Industrial Development Board who in turn sold the property to a private developer. The area is now being developed for office space, light manufacturing, and storage facilities. The ridge top has been clear-cut and leveled as much as 60 to 70 ft. The dirt has been used to fill a valley between the ridges and to grade the slopes, creating a plateau for the construction of up to 12 buildings with parking. Once completed, the developer expects between five and 15 tenants. The developer has also stated that he is working with both the University of Tennessee Agricultural Department and Greenways Oak Ridge on plans to revegetate and landscape the development.

Rarity Ridge Development. A private development company has proposed a mixed, residential/commercial development project for the former Boeing property in western Oak Ridge (Roane County). The developer has purchased about 1200 acres from the previous property owner and an additional 182 acres of adjoining floodplain from DOE. DOE completed an EA for the transfer of the floodplain and issued a FONSI on January 31, 2001 (DOE 2001c). In February 2000, the Oak Ridge City Council voted to rezone the property from industrial to mixed-use. The Rarity Ridge master plan calls for 1734 single-family homes, 133 townhouses, 2106 multi-family dwelling units, and 1,257,900 ft² of commercial space. Over 100 acres are planned for parks, 17 acres for active recreation, and over 30 acres will be retained as a preserve with limited access. In addition, approximately 440 acres will be transferred to a third party for open space and recreational purposes. Property sales are currently in progress and construction on a portion of the property has begun.

Roane Regional Business and Technology Park. This industrial park is located north of Interstate 40 between Buttermilk Road and the Clinch River in Roane County. The 655-acre site will include areas for industrial development and greenbelt uses. The park will be developed in three phases. Phase I development of 200 acres was completed in late 2001 and is expected to house industries that will provide about 500 jobs. Examples of the types of industries expected to locate at the site include

information technology, instrumentation, automotive transportation, light metalwork, materials handling, and corporate administrative offices (Human 2000).

Spallation Neutron Source Project. The Spallation Neutron Source (SNS) will be a state-of-the-art, high-flux, short-pulsed neutron source facility occupying about 110 acres near Oak Ridge National Laboratory (ORNL). The SNS will be located within the ORR on Chestnut Ridge. About 15 permanent buildings covering about 6 acres will be constructed for the project. The SNS facility will generate sub-atomic particles called neutrons for materials testing and other research. Operational employment should begin in 2006 and is estimated to continue for 40 years (DOE 1999). Construction is 60 percent complete on the \$1.4 billion research facility, which should be completed by June 2006.

State Route 58/95 Expansion. TDOT has completed widening of a 5.2-mile section of State Route 58 to four lanes from the intersection with Interstate 40 to 0.5 miles south of the intersection with State Route 95 (TDOT 1999). There is another project under consideration by TDOT to widen an additional 2.8 miles of State Route 95 east to Westover Drive in Oak Ridge. Right-of-way plans have been developed for this project but construction funding has not yet been approved.

USEC Facilities and Equipment Leasing. DOE has completed an Environmental Assessment and on October 18, 2002 issued a FONSI for the lease of facilities and equipment to USEC Inc., which will be used in its Gas Centrifuge Research and Development Project at ETTP (DOE 2002f). The project will utilize a large majority of Building K-1600 and additional leased space in Buildings K-1037, K-1220, and K-101 under a Cooperative Research and Development Agreement between the University of Tennessee, UT-Battelle, and USEC. USEC also intends to use certain leased equipment at an off-site facility at the Centrifuge Technology Center on the Boeing Property in Oak Ridge. The purpose of the USEC Gas Centrifuge Research and Development Project is to develop an economically attractive gas centrifuge machine and process using DOE's centrifuge technology.

West End Utility Expansion. Partners-for-Progress, a group of public and private organizations, is working to extend the utility infrastructure to make industrial sites in western Oak Ridge more attractive to prospective industries. Proposed projects include the following:

- provide water and wastewater to Horizon Center;
- construct a new electrical substation;
- construct a wastewater pump station and force-main, plus provide electric service to Heritage Center;
- provide utilities to the Rarity Ridge and Heritage Center sites; and
- provide utilities to the Oak Ridge Industrial Center.

Some of these projects have been completed (e.g., utility infrastructure to Horizon Center) and others are ongoing. The City of Oak Ridge is currently designing a new package wastewater treatment plant for Rarity Ridge, which will serve that development and could be configured to accommodate other nearby areas (i.e., ETTP). The City's sewage treatment plant located at Turtle Park is no longer expected to accept waste from the west end due to the need to construct the new Rarity Ridge plant. The City is also constructing a new, elevated water tank and associated water infrastructure to serve the Rarity Ridge development from the neighboring public water supplies of the Cumberland Utility District and the City of Kingston.

Y-12 Modernization Program. DOE has issued a Final Site-Wide Environmental Impact Statement and ROD (DOE 2001a) for the operation of the Y-12 National Security Complex (Y-12) and modernization of facilities. Major actions include construction of an Enriched Uranium Manufacturing Facility, an Assembly/Disassembly/Quality Evaluation Facility, a Depleted Uranium Operations Facility, a Lithium Operations Complex, and other facilities, as needed, to meet Y-12 mission requirements. Design of these

modernized facilities is in the early stages and, thus, no detailed quantitative impacts have been assessed. However, modernized facilities would reduce radiation exposure to workers, incorporate pollution prevention/waste minimization measures in their operation, and reduce emissions to the environment compared to the facilities that are currently operating. Demolition of some facilities has been completed and additional demolition is underway in order to prepare for the new construction that is scheduled to begin in late 2003.

5.2 CUMULATIVE IMPACTS BY RESOURCE AREA

Cumulative impacts are discussed below for land use, socioeconomics, and transportation. Impacts primarily result from the actions presented in Sect. 5.1. The magnitude of the impacts depends on the timing of the actions (i.e., greater potential for impacts if several activities are ongoing at the same time). Several of the actions in Sect. 5.1 are unlikely to impact the proposed title transfer of ETPP land and facilities (e.g., SNS, Y-12 Modernization, and ORNL) while others (e.g., continued development of the Horizon Center, proposed development of Parcel ED-3, west end utility expansion, and State Route 58/95 expansion) have a greater potential to impact or be impacted by the proposed action. Because ETPP facilities are currently being leased for commercial and industrial development, the proposed transfer of title would not have a large incremental impact on the environment (including air quality, water quality, cultural resources, and biodiversity) when added to the other past, present, and reasonably foreseeable future actions discussed in Sect. 5.1.

5.2.1 Land Use

Of the original 58,575 acres of land purchased in 1942 by the federal government, 24,340 acres have been conveyed and 34,235 acres remain within the ORR. The purposes for which ORR land has been conveyed include: 16,855 acres for residential, commercial, and community development; 1031 acres to federal agencies and for transportation easements; 3208 acres for preservation and recreation; 3239 acres for industrial development; and 7 acres for mission-related purposes. Current land outgrants (lease/license/permit areas) include 3498 acres for preservation/recreation and 485 acres for industrial development. The title transfer of a portion of Parcel ED-1 removed an additional 489 acres of land from the ORR. Title transfer of land and facilities at ETPP could potentially remove an additional 1600 acres of land (see Section 4.1). However, the majority of the ETPP area being considered for title transfer has already been developed for industrial purposes or been impacted in some other way. Therefore, the change in land use would result in negligible cumulative land use impacts.

A few changes in the acreage of the National Environmental Research Park (NERP) have occurred over the past 23 years. When designated in 1980 the NERP was about 13,590 acres. Some research land was lost with the sale of the former Boeing property and some other land areas. In 1998, the NERP designation was removed from the ETPP Area of Responsibility and Parcel ED-1. Since then the NERP has been expanded to include most of the undeveloped area of the ORR and is currently about 20,000 acres.

5.2.2 Socioeconomics

Nearby developments may also increase employment in the ROI. Major initiatives include development of the nearby Horizon Center, the SNS project at ORNL, the Roane Regional Business and Technology Park, the proposed Rarity Ridge residential/commercial development, and potential development of the Oak Ridge Industrial Center.

There is not sufficient information available to project employment associated with the Rarity Ridge development and the Oak Ridge Industrial Center. A recent analysis developed for land use planning estimated that if ETTP redevelopment and other initiatives succeed during the next 20 years, the cumulative impact could result in up to 25,000 direct and indirect new jobs, or an increase of 6.9% over the 2000 ROI employment figures (ORNL 2002). This rate is about 0.3% per year. Given the uncertainties surrounding future success of any of these initiatives, this represents an upper bound on the cumulative employment impacts.

5.2.3 Transportation

Cumulative transportation impacts in Roane and Anderson Counties could occur from increased development and growth. These potential impacts could be combined with ongoing and planned activities on the ORR and with the planned expansion of the state highway by TDOT. The main transportation impacts of commercial and industrial development would be an increase in average daily traffic volumes.

Associated with increases in traffic is the potential for an increased number of accidents, additional noise and air pollution, and accelerated road deterioration and damage. The increase in average daily traffic volumes could result in inconveniences for other vehicles (personal and commercial) on affected routes and connecting roads. Increased pavement deterioration and damage could increase costs associated with maintaining or resurfacing roads and highways. Although noise associated with increases in traffic is normally not harmful to hearing, increased traffic noise is considered by the public to be a nuisance. Increased accidents put an additional strain on local emergency response personnel. Increased vehicular traffic also has the greatest potential to increase air pollution in the local area because emissions from motor vehicles are poorly regulated. The improvements to State Route 95/58 from the west end of Oak Ridge to the intersection with Interstate 40 should help to reduce local traffic flow.